AMENDMENTS TO THE CLAIMS

Claims 1-6 (Canceled)

7. (Currently Amended) A method of identifying a subject as likely to develop or have Alzheimer's disease or Mild Cognitive Impairment (MCI), comprising:

obtaining a biological sample having peripheral blood cells from said subject, said sample having protein;

providing a probe that interacts with a wild type iron-regulatory protein-2 (IRP-2) (SEQ ID NO:18) and/or mutant IRP-2, wherein said mutant IRP-2 comprises one or more mutations in SEQ ID NO:18;

contacting the biological sample with the probe under conditions that allow the probe to interact with ~~the~~ wild-type and/or mutant IRP-2 protein that is present in the biological sample;

measuring the amount of probe detected after contacting the sample with the probe; and

identifying the subject as likely to develop or have Alzheimer's disease or MCI, by detecting significantly more probe that interacts with wild-type and mutant IRP-2 ~~the~~ protein in the biological sample than would be detected in a control sample.

8. (Previously presented) The method of Claim 7, wherein the probe is selected from the group consisting of a nucleic acid, a protein, and a peptidomimetic.

9. (Previously presented) The method of Claim 7, wherein the detection of the amount of probe that interacts with the protein comprises use of a technique selected from the group consisting of fluorescence-activated cell sorting (FACs), immunoprecipitation, Western blot, immunochromatography, antibody staining, and a hybridization assay.

Claims 10-20 (Cancelled)

21. (Currently Amended) A method for the identification of a defect in iron metabolism in a patient, comprising:

obtaining a biological sample having peripheral blood cells from said subject, said sample having protein;

providing a probe that interacts with a wild type iron regulatory protein 2 (IRP-2) (SEQ ID NO:18) and/or mutant IRP-2 protein, wherein said mutant IRP-2 comprises one or more mutations in SEQ ID NO:18;

contacting the biological sample with the probe under conditions that allow the probe to interact with ~~the~~ wildtype and/or mutant IRP-2 protein that is present in the biological sample;

measuring the amount of probe detected after contacting the sample with the probe; and

identifying the subject as having a defect in iron metabolism by detecting significantly less or more probe that interacts with the wildtype and/or mutant IRP-2 protein in the biological sample than would be detected in a control sample.